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CURRENCY DEPRECIATION IN TIME OF WAR

SUMMARY

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DURING the present war the belligerent nations have made great changes in their currency systems. In many cases there have been large issues of inconvertible legal tender. The expectation which these events engender, that the phenomena of currency depreciation must be with us in force today, finds abundant confirmation. It would seem there are three distinct, tho not altogether unrelated, tests for currency depreciation: (1) a premium on gold, (2) dislocation of the foreign exchanges, and (3) ascent of the general level of commodity prices. It is the purpose of the present essay to examine into the general nature of depreciation, the tests for currency depreciation and the relation among these tests, and the facts relevant to the present degree of depreciation of the currencies of Germany, France, and England.

I

DEPRECIATION IN GENERAL AND CURRENCY DEPRECIATION

As a term in economics and accountancy, depreciation should be taken to mean a decline in exchange value. We say a decline in *exchange value* rather than in *value* simply, because other types of value than exchange

value are not measurable with sufficient accuracy to justify reference to their rises and falls as appreciation and depreciation. It is doubtless habitual in much of our thought to conceive of subjective values (in the Austrian sense) and, I suppose, "social" values, as capable of ascent and descent, that is of growing "greater" or "less." But usage is certainly intolerant of giving the names *appreciation* and *depreciation* to their waxings and wanings. This, however, is a mere matter of terminology, from which we turn to consider certain doctrinal claims. In the literature on the standard of deferred payments, suggestions have been advanced from time to time, to the effect that money ought to maintain through the years a constant subjective value, or perhaps a constant utility, "total" or marginal; tho nothing in the Austrian theory of value gives countenance to these notions. By forcing words, we could restate these suggestions as being that money ought neither to *appreciate* nor *depreciate* in subjective value (or utility). But neither a theoretical definition of constancy in subjective value or utility, nor a statistical test for such constancy, has ever been devised. The best thought on the subject seems to be that in any case constancy in exchange value is the ultimate desideratum in a standard of deferred payments. In this paper, therefore, we shall not feel called upon to look beyond depreciation in exchange value.

Exchange value has been construed as a "ratio in exchange," as a "rate of exchange," as "purchasing power," and also as "the quantity of some other good commanded in exchange." While doubtless in some relations there is a choice among these competing conceptions of exchange value, the choice would seem to make no substantial difference in the practical interpretation of or application of the idea of depreciation as we

have defined it. "Rate of exchange" nevertheless would appear to be the best construction to place on the term exchange value, and this for the reasons so clearly set forth by Professor J. M. Clark in his recent article on "The Concept of Value."¹ At the same time there is no wisdom in surrender to any terminological doctrine which would interdict the use of the phrase "purchasing power." Imagine a state of affairs under which it would be unlawful, so to say, to speak of the fall in the purchasing power of gold since 1897. The purchasing power of any good is measurable only in its rate or rates of exchange, and it is as safe for the purposes of real analysis to think "purchasing power" as it is to think "rate" or "rates" of exchange.²

Any given exchangeable article has as many different purchasing powers or rates of exchange as there are other articles against which it may be traded. To follow C. M. Walsh,³ it has as many *particular exchange values* as there are other articles against which it may be traded. In addition to its numerous "particular exchange values," each article also has its *general exchange value* or purchasing power over the mass of commodities, or over goods in general. It is granted, however, that money is the only article whose general purchasing

¹ In the Quarterly Journal of Economics, August, 1915, pp. 663-673. "Ratio" in exchange implies an equal quantity of a positive value, so to say, in each of the two articles which exchange on even terms, tho it is very doubtful if this implication is intended by all who use the phrase. "Rate" of exchange is free from this implication, and according to best usage rather negatives it; and this is its virtue. Incidentally it might be suggested that the question of the existence of a positive value, or a "social" value, cannot be settled by inference from the fortuitous use of the term "ratio" by economic writers.

² Purchasing power ought not to be conceived as an independently subsisting entity, changes in which are first caused by some external conditions and then secondly propagated from the purchasing power to the rate of exchange. That is, a change in purchasing power is not a cause of a change in the rate of exchange, but *is* this change. It should be obvious that to prove that alterations of purchasing powers *cause* alterations of exchange rates, changes in purchasing power would have to be capable of independent measurement or determination, which is not the case.

³ The Measurement of General Exchange Value, pp. 10-13.

power is the object of much consideration in economic writings. It being conceded that an article's exchange values are plural in number, it is next to be observed that it is entirely possible for one of the values to depreciate and another simultaneously to appreciate. For an illustration dealing with two separate money values, we may assume that at the beginning of the Civil War, on a day when greenbacks were still at a parity with gold, a factory was worth say \$100,000, in paper or gold. But at some later date, when paper dollars had fallen to fifty cents in gold, the factory came to have a value we may suppose, of \$70,000 in gold, and one of \$140,000 in paper. This is a case where there is a *depreciation* of 30 per cent in one of the exchange values of the factory and an *appreciation* of 40 per cent in another. If we have an impression that only one of these movements is "real" and the other is "fictitious," that for instance the depreciation is genuine, but the appreciation is illusory, we are in error. There is no escaping the fact that the plant appreciated in its exchange value against greenbacks. This particular exchange value ascended. If it should be urged that in truth the factory depreciated and the greenbacks merely depreciated more, the reply is that this is correct provided we are careful to add "in terms of gold." But in terms of greenbacks the factory appreciated. During the year ending September 1, 1915, the British pound sterling appreciated in terms of francs, but depreciated in terms of dollars and also in terms of the mass of commodities in English markets. No one of these movements is less "real" than another, tho doubtless one may have a greater significance in certain relations than another.

It is also well to bear in mind that we do not disprove the existence of a given value depreciation when we quote special or proximate causes for its being. Suppose

a patriot says "the rise of food and other commodity prices in Germany is due to the scarcity of goods and is not due to the depreciation of the mark," or perhaps, "is not a case of depreciation of the mark." The answer is that the rise of the prices of goods *is* a depreciation of the mark in *terms of goods*, and the phenomenon does not cease to be because you explain why it is.

Enough has been said to make it clear that there may be more than one type of depreciation and more than one test for the phenomenon. The following tabulation is offered as showing the leading kinds of depreciation.

DEPRECIATION

I. Decline in the exchange value of goods or property rights.

- A. Depreciation in the accountancy sense; being a decline in the capital value of durable income-bearers measured in terms of money, and being a decline of a "particular exchange value."
- B. Depreciation of the mass of goods in terms of money; being the counterpart of a rise in the general purchasing power of money (see II C below).

II. Decline in the exchange value of a money unit.

- A. Depreciation of a given currency unit in terms of some other domestic money unit; being a decline in a "particular exchange value."
- B. Depreciation of a money unit of one country in terms of the money unit of another country; being a decline in a "particular exchange value."

- C. Depreciation of a given money unit in its general purchasing power over the mass of commodities which are circulated by it; being a decline in a "general exchange value."

The two chief classes in our tabulation are obtained by drawing the distinction between the depreciation (or its counterpart, the appreciation) of goods on the one hand, and the depreciation (or appreciation) of money or currency units on the other.

The first entry under I is (A) depreciation in the practical accountancy sense. In the interest of completeness, I may be pardoned for pausing to consider this type of depreciation briefly, tho it is not the main object of our inquiry. In the accountancy sense, depreciation is the decline in the value of durable income-bearers measured in terms of money. All goods are income-bearers under the definition of income advanced by Irving Fisher — a definition which it is to be hoped will meet with general acceptance. But only goods with an appreciable span of life ever have their income-values (or the value of the incomes they yield) and their capital values (or their own values when themselves transferred bodily or outright in exchange) separately appraised or determined. The value of a loaf of bread and the value of its yield or hire are not separable in practical life. It is only where the income stream or income item from goods or property is deferred a sufficient length of time to permit of the goods having different capitalized values at different points of time, as a matter of business practice, that we have depreciation or appreciation in the sense of accountancy. A note with three days to run is a property having a sufficient span of life to exhibit the phenomenon in question; tho under the current ways of reckoning its value happens to *appreciate*.

Depreciation or appreciation in the accountancy sense may be said to fall into three subdivisions, classified according to causes, as follows. (1) Value changes due to a change at some point of time in the interest rate used in capitalization. For example, a 5 per cent \$100 bond with twenty years to run, sold this morning on a 4 per cent basis (price or capital value \$113.59) may be sold this afternoon on a $4\frac{1}{2}$ per cent basis (price \$106.51); showing a sudden depreciation of \$6.08. (2) Changes due to a revision of estimate of the future income stream. For instance, a mine now assumed to be capable of yielding \$100,000 net a year for twenty years, on a 20 per cent basis (the rate of interest earned by the "sinking fund" taken at 4 per cent) has a capital value of \$428,265; whereas if today we alter our predictions and assume that it will yield an income of \$75,000 net for only fifteen years, its capital value under the new assumptions but on the basis of the same interest rate will become \$300,000 (approximately), showing a depreciation of some \$128,000, due to a revision of estimate of income. (3) We have declines in capital value taking place without either a change in the rate of interest or a change in the estimated total income stream. This is what might be called the standard type of depreciation in accountancy, being regularly present in the case of mines, factories, premium bonds and various other kinds of plants and properties whose incomes terminate after a time because of physical wear and tear or expiry of contractual obligation to continue payments. Examples are: a 5 per cent bond with twenty years to run, coupons annually, is worth \$113.59 on a 4 per cent basis, while five years later (with fifteen years to run) its value will have depreciated to \$111.12 on the same basis; or secondly, the mine above considered, yielding \$100,000 net for twenty years, worth \$428,265

on a 20 per cent basis (4 per cent on "sinking fund") will be worth but \$400,000 five years later, on the same basis. Where the future income stream is exceedingly problematical, as in so many cases in practical business life, various rules of thumb which do not involve a complete application of the mathematics of capitalization are adopted by the practical accountant to determine depreciation.¹

The second principal category of depreciation is a decline in the exchange value of a money or currency unit. As indicated above, three subsidiary cases are to be distinguished, as follows. (a) A decline in the purchasing power of a given currency unit over some other domestic monetary unit; that is, the decline in the value of one kind of money in terms of another kind of domestic money. For example, we have the fall in the purchasing power of the United States notes over gold dollars in our Civil War period (followed by their subsequent appreciation back to par). This is the case of the disappearance of parity among the different forms of currency in a national monetary system. (b) Second, we have the fall of the purchasing power of a given currency unit over some foreign money unit, such as the recent declines in the value of pounds, francs, and marks in terms of the American dollars, or in terms of the guilder of Holland. (c) Third, there is the descent of the purchasing power of a given money unit over the mass of goods in the market where this money circulates. In contrast with cases (a) and (b), this is one in which the depreciation takes place in a *general exchange value*. The latter conception, also called *general purchasing power*, has its difficulties, but it would seem it is with us to stay, certain attacks on it notwithstanding. Any sys-

¹ Such, for instance, are those explained in the chapter on depreciation in *Modern Accounting* by H. R. Hatfield.

tematic treatise on index numbers is, according to the view taken here, primarily a treatise on the methods of measuring *changes* in general purchasing power. There is no such thing as a figure representing general purchasing power at a moment of time without relation to other times. Merely changes (in time) or differences (in places) in this general exchange value can be indicated by index numbers. To deny the soundness of the conception of general purchasing power is to deny us the right to speak of the decline in the value of gold since 1897. Should an opponent urge that all that has happened since 1897 is a decline of the average (in some sense) of the numerous distinct rates of exchange of gold money against different goods,¹ I for one might vote to agree and also vote to persist nevertheless in speaking of a decline in the general purchasing power of gold. In any event, the last type of depreciation listed here is that described in the current terms of economists as a decline in the purchasing power of money over goods in general, or as a decline in the general exchange value of money, and described in the language of others by some lengthier and more complex phrase which they think best to use.

II

THE PRACTICAL TESTS OF CURRENCY DEPRECIATION

Confining the discussion henceforth to currency depreciation, it readily appears there are three practical tests or indexes of this style of depreciation, corresponding to the three classes of the phenomenon as given in our table.

¹ It appears to me that rates of exchange may assuredly be added and averaged. To be averaged (whether directly, or indirectly through the use of percentage or index numbers) they must of course be by nature capable of summation. Cf. Professor B. M. Anderson's contention that these rates cannot be added, in his paper on "The Concept of Value Further Considered," in this Journal, August, 1915, p. 686.

They are: (1) A premium on gold; an index of the depreciation, in terms of gold money, of some domestic representative money or of bank-credit currency. (2) A dislocation of a foreign exchange rate; an index of the depreciation of one of the national currencies represented in the rate, in terms of the other; also an index of the appreciation of this other in terms of the one. (3) A rise of the index number for the general price level; an index of the depreciation of a money unit in its general exchange value in terms of the mass of commodities.

A given currency unit may depreciate (or appreciate) in any one of the three values just indicated. By currency is meant any common medium of exchange, including bank-credit as well as representative moneys. When all forms of currency are at a parity in a country, we do not have it brought home to us that there are really several distinct currency units. But a derangement of the monetary or banking system discloses their existence. A premium on gold in terms of government or bank notes is a familiar historical phenomenon. But a premium on gold in terms of bank-credit may exist without a disturbance in the gold-value of circulating notes. For an illustration we have the 4 per cent discount on certified checks in New York reported for a few days in 1907, at a time when governmental paper money and national bank notes showed no such discount. For a brief interval it took something like \$104 of certified checks to procure \$100 of paper money.

III

PREMIUM ON GOLD

The writer now desires to offer such facts as he has been able to gather pertaining to the present depreciation of the mark and franc and pound sterling. Considering in order the three tests of depreciation, we take up first the appearance of gold premiums.

At the outset it is necessary to distinguish between (a) the premium on gold proper and (b) the inferential premium on gold disclosed in a dislocated foreign exchange rate. Not infrequently we are told that there is such and such a premium on gold in a given country, when what is meant in fact is that there is in this country such and such a premium on exchange on some gold-standard country. In other words, a premium on gold is inferred from a premium on exchange. There is no essential error in this inference, except in times of acute disturbance, but the *facts* of the inferential premium on gold are facts of the foreign exchange rates, and will be given as such when we come to the subject of the present position of the exchanges. By the premium on gold proper is meant a premium exhibited in actual domestic trading of depreciated currency against gold coin or bullion, such as took place in the Gold Room in this country. Thus if the price of a gold dollar, or of enough bullion to make a gold dollar, is \$2 of paper, there is a premium on gold proper, and the premium is 100 per cent. As regards gold premiums proper in Germany, France, and England, so far as the writer's knowledge extends, there are no facts, or better perhaps, the only facts are that no premiums on gold whatsoever have been quoted in these countries.

This is the case, even tho currency conditions in Germany and France since the outbreak of the war have been of a character especially adapted to produce gold premiums. Currency disturbances in Great Britain have not been so great, but they have been sufficient to occasion, or if you prefer, to permit, a heavy decline in the price of sterling exchange in leading neutral countries, and thus to create an inferential premium on gold in England. Germany, on August 4, 1914, (1) annulled the obligation of the Reichsbank to redeem its notes in gold or anything else, while leaving this currency in possession of the legal tender power which had been conferred upon it in 1909; (2) made the notes of other banks of issue redeemable in notes of the Reichsbank; and (3) made Imperial Treasury Notes irredeemable and legal tender.¹ At about the same time (4) the Imperial Loan Banks (*Darlehnskassen*) were created to issue their notes by way of loans to individuals on many types of collateral, these notes being irredeemable tho not possessing the legal tender power. This newly created note was made eligible to be counted as part of the one-third reserve carried by the Reichsbank against its own notes. Without expanding on this subject, we may safely assert that a more whole-hearted resort to irredeemable legal tender paper than Germany's can hardly be imagined. The German plan of procedure seems to be essentially this. German gold, as far as the authorities have been able to draw it out of circulation and sequester it in the vaults of the Reichsbank, has had its relations with the actual local currency of the country completely severed, and it now exists as a special metallic fund which may be

¹ Cf "Germany's Financial Mobilization," by Ludwig Bendix, in this Journal, August, 1915, pp 724 et seq

These laws are also discussed in the "Report of the Imperial Bank of Germany for 1914," a translation of which is published in full in the *London Banker's Magazine* for October, 1915, pp. 513-544.

drawn upon so far as necessity compels for the purposes of foreign purchases. It is doubtless the hope of the Empire to save as large a part of this fund as possible for use in rehabilitating the gold standard after the war.

In spite of the extraordinary currency situation in Germany no premium on gold has ever been published in that country, so far as the writer can learn, since the beginning of the war. The following news item, however, appeared in the *Annalist* (New York) for December 21, 1914 (p. 484), in the form of a communication dated, Berlin, November 30th:

While there was no gold premium in the internal market, recently a tendency has manifested itself among speculators to try for gold by offering a small premium. This called forth a drastic decree of the Bundesrath which prevented, under severe penalties, both the offering of a premium for gold and the exporting of gold.

In France (1) the notes of the Bank of France were made irredeemable and given full legal tender power, and (2) the limit upon the issue was raised from 6,800,000,000 fr. (the limit in force before the beginning of the war) through several steps to 15,000,000,000 fr. On July 30, 1914, the actual issue of the Bank of France stood at 6,683,000,000 fr., but has since ascended to the very large figure of 14,188,000,000 fr. (November 11, 1915). Gold export has been prohibited by French law, altho, no doubt, ways have been left open for export by the Bank of France when the authorities deem such action expedient. The writer has been unable to find any quotation of a premium on gold in France whether in terms of notes or of bank deposit-credit. Nothing has been found beyond such an isolated and uncertain item as the following, from the *New York Times*, August 1, 1914, p. 3, col. 3, (published at the very outbreak of the war). "Paris, July 31, 1914. Gold was

at $1\frac{1}{2}$ per cent premium here today. English sovereigns were selling at 28 fr. each, instead of the normal rate of slightly more than 25 fr." If the sentence about English sovereigns means what it says, it signifies that British gold coin sold in Paris at the rate of 28 fr. per pound sterling. This would establish an actually present gold premium of about 11 or 12 per cent. If the sentence means that drafts or telegraphic transfers on England were selling at 28 fr. per pound, this would indicate what we have called an inferential gold premium of the same amount; but this would be one of the cases where an inferential premium might be in a sense fictitious. It might be added that the *Annalist* (N. Y.) for August 3, 1914, p. 140, contained the following statements, in substance: "Gold went to a premium, speaking generally of western Europe. . . . Foreigners in France have been paying fantastic premiums for gold."

In England the only currency change caused by the war (unless we should speak of a moratorium as a currency event) was the issue of the new governmental paper called Currency Notes, created by Act of August 6, 1914, and made legal tender. These notes are redeemable in gold at the Bank of England, from a special gold fund carried by the government with the Bank for the purpose. At the start the chief object in issuing them appears to have been to lend them to the banks as an emergency currency, but direct aid to banking institutions has ceased to be the dominant aim long since. On November 27, 1915,¹ they were outstanding in the sum of approximately £90,000,000 (the highest figure reached up to that date) and at this time only £438,000 were out as advances to banks. The chief cover then consisted of

¹ The figures to follow are taken from the regular weekly statement of the Currency Notes Account appearing in the *London Economist*, in this case in the issue for November 27, 1915, p. 910.

- (1) £28,500,000 coin and bullion at the Bank.
- (2) £44,620,000 of pledged government debt.¹
- (3) £17,114,000 government deposit with the Bank.
- (4) £438,000 advances to banks repayable by them.

Respecting the status of the Bank of England note, it appears that the Bank Act was suspended just before the governmental Currency Notes were issued, and that the Bank issued a certain amount of its notes without deposits of gold, but retired them before its weekly statement of condition was made up. The first temporary "uncovered" issue was to serve as emergency currency, but was promptly replaced by the new government notes. In no statement of the Bank of England since the beginning of the war has there been evidence of the taking advantage of suspension of the Bank Act.

The writer has discovered no publication of quotations of a premium on gold, or on legal tender, in England, tho an inferential premium exists because of the depressed rates for sterling in New York and Amsterdam. The premium implied here might be, and probably is, one *on* gold and notes both, *in terms of* bank deposit currency or bank-credit. The most plausible hypothesis for the facts known to us is that there is an extra-legal and moral union of the banking interests of Britain, which has adopted the program of paying out notes (convertible at the Bank of England in gold) in ordinary cases on demand, while preventing the gathering of gold in large quantities for unregulated private export. England has exported much gold to America, but apparently under the control of central authorities.

¹ What debt is unknown, except that it is not present war debt (according to the statement in an unsigned article in the *Annalist*, N Y, for December 28, 1914, p 503)

IV

DERANGEMENT OF THE FOREIGN EXCHANGES

We come next to the foreign exchange rates as evidence of depreciation or appreciation among national currencies. It may be called appreciation as well as depreciation, because the depreciation for instance of francs in terms of dollars is quite as much a case of appreciation of dollars in terms of francs. Or, to take another instance, the greater depreciation of francs than pounds in terms of dollars is also a case of appreciation of pounds in terms of francs. The latter statement may be made not only as an inference from the greater relative decline of francs than pounds in terms of dollars, but is also proved by the direct rates of exchange between France and England. If we suppose that back of these relative movements lies a situation in which dollars have neither appreciated nor depreciated, while pounds have depreciated some, and francs more — this supposition being probably correct enough if we measure all three currency units in *terms of gold* — we must also remember that whereas the pound has depreciated in terms of dollars and of gold, it also has appreciated in terms of francs.

A few words of explanation are needed on the precise meaning of a percentage figure for exchange premium (or appreciation) and exchange discount (or depreciation). The percentage either of premium or discount is commonly measured from the exchange par, or more precisely the mint par, as base. An argument could be made in favor of measuring the abnormal premiums and discounts in which we are now interested from the upper and lower gold points respectively, calculating these on the basis either of ordinary or of present ex-

traordinary costs of specie shipment. But we may be content not to discuss this refinement and to measure simply from the mint par. The results from the two methods will not differ greatly. Thus a premium of 9 per cent calculated by our simpler method might become one of from about $8\frac{1}{2}$ to $8\frac{3}{4}$ per cent, calculated by the other method. When demand sterling is at $4.87\frac{7}{8}$ in New York, it is at a premium of $\frac{1}{2}$ per cent, according to the method we are adopting, altho it is not above the ordinary gold point. Incidentally, it is common for English money articles to speak of such a rate as $4.87\frac{7}{8}$ as exhibiting a "premium" on sterling.

The premium shown in a rate is the excess of this rate above par divided by par, the result being multiplied by 100 to make it a percentage; and the discount is the deficiency of a rate below par divided by par, and multiplied by 100. The consequence is that with a given rate of exchange (other than par) between two national units, the percentage of the premium on the one is *not* the same as the percentage of the discount on the other. Thus suppose Paris quotations of New York exchange and New York quotations of exchange on Paris were to agree (as they should owing to arbitrage) in making \$1 the equivalent of 10.36 francs (par being approximately 5.18 or half this rate), the premium on dollars, most prominent from the viewpoint of Paris, is 100 per cent, while the discount on francs, most readily seen in New York, is 50 per cent. Dollars have appreciated 100 per cent in terms of francs but francs have depreciated only 50 per cent in terms of dollars. In a word, the percentage figures for appreciation and depreciation have the relation of *reciprocals*.¹ (A decline of francs to a

¹ That is, 100 per cent premium means a value of 200 per cent, and 50 per cent discount means a value of 50 per cent. Two hundred per cent (or 2) and 50 per cent (or $\frac{1}{2}$) are reciprocals. When the premium and discount percentages are small, they become almost the same. Thus corresponding to a 5 per cent premium there is a discount very close to 5 per cent.

value of zero dollars converts into a discount of 100 per cent.)

The movements of the relative values of the currency units of present interest to us, may best be exhibited by giving tables of the exchange rates in New York or Amsterdam, the two leading neutral exchange markets. Fuller statistics are available to the writer for New York. As a matter of interest it may be said the exchange rates between these two centers have been perturbed to no small degree during the war. About the middle of October, 1914, when our exchange market had just recovered from complete demoralization, and before which time all published quotations are reported as nominal, New York sight rates on Amsterdam touched $.42\frac{1}{2}$. Rates at later dates are shown below.

NEW YORK ON AMSTERDAM

(Cents per Guilder. Par approximately .402)

Date	Rate	Premium or Discount on Guilders
Middle of October, 1914	$.42\frac{1}{2}$ (highest)	5.7 % premium
End of May, 1915	$.38\frac{3}{4}$ (lowest)	3.6 % discount
End of December, 1915	$.43\frac{3}{8}$ (highest)	7.9 % premium

Taking now the American dollar as an arbitrary standard of measurement of the appreciation and depreciation of pounds, francs, and marks, let us examine certain figures from the New York foreign exchange market. Cable rates are to be preferred when obtainable for all dates, but sight rates may be substituted with little harm as the gap or "spread" between the two rates ordinarily does not exceed one tenth of one per cent (it is perhaps unnecessary to state that the superior price obtained for cable transfers has no connection with telegraph charges).

STERLING. (Par 4.8665)

Premium or Discount	Rate for Cables	Date	
Premium, 44 %	7.00	1914 First week in August	The highest recorded rate for the week. "Small transactions" took place at this figure.
Premium, 28½ %	6.25	(Same)	A larger number of transactions took place at about this figure.
Premium, 4.2 %	5.07	Aug. 28	Market begins to settle down on this level. Henceforth, a long decline with moderate upward reactions at times.
Premium, 1/7 of 1 %	4.87 $\frac{3}{8}$	Nov. 13	Below ordinary gold export point.
	4.86½	Dec. 24	Par (approximately).
Discount, 7½ %	4.50	1915 Sept. 1	Lowest point in the day during an exchange "flurry" or panic.
Discount, 2.6 %	4.74	End of Dec.	

Noteworthy events exerting an influence on the course of sterling were the formation of the gold pool in New York, the visit of the Anglo-French loan commission, and the subsequent making of the Anglo-French loan of \$500,000,000.

The following shows the rates for New York exchange on Paris.

FRANCS

(Par 5.1826 francs per dollars, or 19.3 cents per franc)

Premium or Discount	Rate in Cents	Sight Rate as Quoted	Date	
Premium, 5.7 %	20 4	4 90 ¹	1914 Period till middle of October	During this period all rates are quoted "nominal" The highest and lowest of these nominal quotations are given. Decline fairly steady with moderate upward reactions.
Premium, 1.2 %	19 53	5.12 ²		
Premium, 1.6 %	19 63	5.09½ ²	Week ending Nov. 27	
Discount, 14 9 %	16.58	6 03 ²	1915 Sept. 1	
Discount, 11.6 %	17.07	5 86 ²	Last week of December	

Next, the course of marks in New York.

MARKS.

(Par 95 284 as rate is quoted, or 23.8 cents per mark)

Early Period	Rate	Premium or Discount
No quotations till middle of August, 1914		
"Nominal" quotation till the week ending October 9, 1914 . .	97 (highest)	1.8 % premium
Range in period of nominal quotation	91¼ (lowest)	3.7 % discount
September 1, 1915	80⅝ "	15.4 % "
Last week in December, 1915	75⅞ ₁₆ "	20.7 % "

¹ Highest² Lowest

Summarizing, we have the following on the rates of depreciation, in terms of dollars, at the close of 1915:

British pound sterling	26 %
French franc	116 % ¹
German mark	20.7 %

V

THE BEHAVIOR OF PRICES

The available facts regarding the movements of prices must be brought under review, if we are to apply the third test for currency depreciation. Before the war, systems of index numbers were being maintained and results were being published, somewhat tardily in cases, in nearly all of the countries now engaged in the conflict, as well as in the three leading ones with which this article deals.² In England, the *Statist* and the *Economist* numbers have been continued in the usual way even since the outbreak of the war. In France and Germany, however, so far as the writer is aware, no standard or other index numbers have been published for dates subsequent to July, 1914. Some facts, nevertheless, have been secured respecting prices in these countries, and this material will be presented for what it is worth.

Speaking first of England, it seems unnecessary to give the index numbers month by month since July, 1914. Suffice it to say this series would show a practically uninterrupted and withal very steady advance of prices. A brief table of index numbers is presented beneath.

¹ Swiss francs stood at a trifle above par in New York on January 11, 1916

² See Bulletin of U S Bureau of Labor Statistics, No 173, July, 1915, on this subject

ENGLISH PRICES

	Index Number as Published		The Same, Recast with Prices of July, 1914 as Base ¹	
	Economist	Statist	Economist	Statist
Economist's Base:				
1901-05.	100.0	....	....	....
Statist's No.:				
For year 1900 ....	....	75.0	....	....
For year 1901 ....	....	70.0	....	....
End of July, 1914.	116.6	82.4	100.0	100.0
End of October, 1915.	153.2	110.0	131.4	133.5

If we accept these figures, we may say that during the first fifteen months of conflict, English prices rose from 30 to 35 per cent. Prior to the war, as the table shows, the *Economist's* number indicates a rise of prices of about 16 per cent in a decade or more. The *Statist* number for 1901 is 70, and for July, 1914 it is 82.4, implying a rise of about 18 per cent ² in thirteen years. It would appear, then, English prices have risen about twice as far in fifteen months of war as they rose in twelve or fifteen years of peace immediately preceding the war.

With respect to French prices, difficulty has been experienced in finding data sufficient to support even the roughest attempt at an index number. Ephemeral literature contains many isolated and uncertain references to recent prices in Europe, virtually always too fragmentary for use. The *Bulletin of the United States Bureau of Labor Statistics*, No. 170, May, 1915, gives many prices taken from the markets of numerous countries, for the autumn of 1914; but the best data on

¹ The base is here changed by the crude method of taking the general number for July, 1914, as 100 in each case, without unbuilding and rebuilding the system. The error is probably small.

² Calculated roughly, 82.4 being 118 per cent of 70.

prices in France which the writer has discovered for the purpose of making a rough index number, are found in a letter from the Paris correspondent of the *London Economist*, published in that paper, November 27, 1915, p. 900. The Prefecture of Police of Paris gave out the prices of thirteen articles (eleven foods and coal and petrol) for the year 1913 and for November, 1915. Taking 1913 prices as bases, the writer has calculated the index number for the prices of each commodity as of November, 1915. The "unweighted" (*i. e.*, equally weighted) arithmetical average gives us a general index number of 149. The figures, such as they are, follow:

FRENCH PRICES

Ante-bellum price number (1913) ¹	100
Number after 15 or 16 months of war	149

This indicates a rise of prices of about 50 per cent and a decline in the purchasing power of French currency by $\frac{1}{3}$, or to 66 per cent.

In the case of Germany we find data somewhat more satisfactory. The Imperial Statistical Office (Kaiserlich-Statistisches Amt) has published regularly since the beginning of the war the retail prices in Berlin of some twenty articles of food. An index number has been constructed from these prices for the *Labour Gazette* of the British Board of Trade. In calculating this number the different commodities are weighted according to their importance in consumption as shown by German data. The index numbers for different dates have not been found in any one place, but gathered chiefly from the pages of the *Journal of the Royal Statistical Society*.²

¹ Prices for these same articles at some time later than 1913, but still prior to the war, are not given.

² See especially the issues for January, 1915, p. 115; March, p. 326; July, p. 644.

INDEX NUMBER FOR RETAIL FOOD PRICES IN BERLIN

1914	July	100.0	1915	January	131 0
	August	113.3		February	142.6
	September	110.5		March	149 0
	October	116 4		April	156 5
	November	120 9		May	165 3
	December	126.1		June	
				July	169.6
				August (or September ?)	175.3

An "unweighted" general index number calculated by the writer from Berlin prices as made public by the Imperial Statistical Office and reported in the *Bulletin de Statistique*, Paris, July, 1915, p. 78, shows a rise from May, 1914 to May, 1915 of 88 per cent.

The following summarizes what there is to offer regarding prices in the three countries which we are studying.

ROUGH APPROXIMATIONS FOR THE THREE COUNTRIES¹

	Ante-Bellum Prices	Prices in the Autumn of 1915	Indicated Per- centage of Fall in Purchasing Power of Currency Unit
England (<i>Economist</i>)	100	131.4	24 %
(<i>Statist</i>)	100	133.5	25 %
France	100	149.0	33 %
Germany	100	175.3	43 %

It will suffice to indicate briefly the trend of American price data. The New York *Annalist* numbers run as follows:²

¹ More exact information as to dates is given in the preceding separate tables for each country

² As read from a chart printed in the *Annalist* for January 3, 1916, p. 24

		Percentage of 142
June, 1914	142 0	100
In September, 1914	161 0	113 (highest)
End of December, 1914	147 0	103.5
In September, 1915	136.0	96 0 (lowest)
End of December, 1915	149 0	105.

It might be said that for two years prior to June, 1914, the *Annalist* number maintained a level quite close to 142.

The Bureau of Labor Statistics index numbers for retail prices of food in the United States, brought down to December, 1914, are as follows: ¹

	Percentage of 99 2	
March, 1914	98.3	
June	99 2	100
July	102.3	
August	106 6	
September	107.1	108
October	104 9	
November	104 7	
December, 1914	103.9	105

The evidence — obviously fragmentary — respecting the depreciation of currency in purchasing power over commodities generally may be assembled as follows:

	Ascent of Prices During the War to the Close of 1915	Decline in the Purchasing Power of National Currency Units
England	33 %	25 %
France	50 %	33 %
Germany	75 %	43 %
United States	5 %	5 %

The fact that the figures assembled above are very crude, and are perhaps of but transient value, does not restrain the writer from throwing together the following:

¹ From Bulletin No 156

SUMMARY OF MEASURES OF DEPRECIATION ¹

	British Pound Sterling	French Franc	German Mark	United States Dollar
Depreciation as measured in gold premiums proper		No quo- tations		..
Depreciation as measured in the foreign exchange rates against the American dollar	2.6 %	11.6 %	20.7 %	..
Depreciation as measured in the rise of commodity price .	25 %	33 %	43 %	5 %

This paper has endeavored to make clear the nature of depreciation and to describe the tests for currency depreciation, and finally to measure in a general way the present degree of depreciation of three important national currencies, by applying these tests to such data as are at hand. The most interesting theoretical problem which forces itself upon one in connection with this subject, is the question of the relations existing among the tests for currency depreciation — what we ought to expect in the way of harmony or correlation between the three. To this question it is the writer's hope to address himself in the future.

A. C. WHITAKER.

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¹ The various figures in this final summary are good for scattering dates close to the end of 1915. Perfectly synchronized data are not available.